

11. (once amended) The system for molding a circuit package, as set forth in claim 1, wherein the [bottom]first support plate contains rail ejection pins.

REMARKS

Claims 1-20 stand rejected. Claims 1, 5, 9, 10 and 11 have been amended to set forth the subject matter of the invention more clearly. Reconsideration of the application as amended is respectfully requested.

Objections to the Drawings

The Examiner objected to the drawings under 37 C.F.R. 1.84(p)(4). Specifically, the Examiner objected to the designation of reference characters “90” and “95” as each being used to designate “the film.” The Examiner requested that the difference between the film 90 and the film 95 be clarified. Fig. 2 refers to a film 90 in a molding system incorporating a vacuum to seat the film 90. Figs. 3-6B illustrate the present system, which does not incorporate a vacuum to seat the film 95. Different reference numerals are designated to illustrate the different systems being described (e.g., bottom support plate 60, cavity 70, film 90, and top support plate 100 of Fig. 2 compared to bottom support plate 65, molding cavity 75, film 95, and upper support plate 105 illustrated in Fig. 3). Corrections to Fig. 6A and 6B have been made to reflect this distinction by changing reference numeral “90” to “95,” as indicated on the attached separate paper with the proposed revisions indicated in red ink. Applicant believes that the revisions to Figs. 6A and 6B overcome the Examiner’s objection.

Rejections Under 35 U.S.C. § 112

The Examiner rejected claims 9-11 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Specifically, the Examiner stated:

In claims 9-11, “the bottom support plate” has no proper antecedent basis. For the purpose of examination, “the first support plate” is assumed.

Further, the Examiner stated:

In claim 5, do not understand what “between the first support plate on the cavity plate” means. For purpose of examination, “between the first support plate and the cavity plate” is assumed.

Claims 9-11 have been amended to correct obvious minor errors which may have rendered the claims indefinite under 35 U.S.C. § 112. Claim 5 has been amended to set forth the claimed subject matter more clearly, as discussed further below. Applicant believes that these amendments are sufficient to overcome the Examiner’s rejections under 35 U.S.C. § 112.

Rejections Under 35 U.S.C. § 102

The Examiner rejected claims 1, 2, 5, 6, 8-14 and 17-19 under 35 U.S.C. § 102(b) as being anticipated by Neu (US 5,405,255). The Examiner’s rejections are too lengthy to be efficiently reproduced in their entirety herein. However, with specific regard to independent claim 1, the Examiner stated:

Neu discloses an integrated circuit encapsulation apparatus (col. 4, line 15 to col. 8, line 36) comprising:

- A first support plate 27;
- A second support plate 54 proximately positioned with respect to the first support plate;
- A cavity plate 29 positioned between the first support plate and the second support plate, where the cavity plate having

an aperture configured to accept a protruding portion of the circuit package (fig. 1).

Applicants respectfully traverse this rejection. Anticipation under section 102 can be found only if a single reference shows exactly what is claimed. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 U.S.P.Q. 773 (Fed. Cir. 1985). For a prior art reference to anticipate under section 102, every element of the claimed invention must be identically shown in a single reference. *In re Bond*, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). To maintain a proper rejection under section 102, a single reference must teach each and every element or step of the rejected claim. *Atlas Powder v. E.I. du Pont*, 750 F.2d 1569 (Fed. Cir. 1984). Thus, if the claims recite even one element not found in the cited reference, the reference does not anticipate the claimed invention.

Claim 1, as amended, recites a system for molding a circuit package comprising a first support plate, a second support plate, and a cavity plate. Further, the cavity plate has “an aperture configured to accept a protruding portion of the circuit package such that the protruding portion of the circuit package contacts the first support plate.” One of the disadvantages of prior systems is that they increase package height by encapsulating the entire package (page 2, lines 19-21). The presently claimed system adds no additional height to the top of the circuit package during the encapsulation process since the top surface of the die portion of the circuit package is only encapsulated about its periphery, leaving the surface of the die exposed (page 4, lines 11-12). Not only does the present system alleviate the disadvantages associated with adding additional height to the circuit package during the encapsulation process, but by leaving the face of the die exposed, the present system provides a circuit package that advantageously dissipates

heat rapidly (page 4, lines 11-13). To facilitate the encapsulation of the periphery of the die while maintaining exposure of the top surface, the cavity plate is configured such that the die surface is brought into contact with the first support plate, either directly or indirectly through a film. Either way, the configuration of the recited system provides a mechanism whereby the die surface is not encapsulated and therefore overall package height is not increased.

Conversely, the Neu reference discloses a molding system wherein a die is completely encapsulated during the molding process to encompass and cover the top surface of the die. While Neu contemplates facilitating different sizes and vertical dimensions (col. 5, lines 18-62), it is clear that Neu does not disclose a system for encapsulating an integrated circuit wherein the top surface of the die is left exposed after the encapsulation process. The Examiner has characterized the cavity inserts 29 and 29A as providing the cavity plate element of claim 1. It is clear that the cavity inserts 29 and 29A do not have an aperture configured to accept a protruding portion of the circuit package such that the protruding portion of the circuit package contacts the first support plate. To be clear, the cavity 36, as disclosed in Neu, provides a void around the periphery *as well as over the surface* of the chip 33 during the encapsulation process as evidenced by Fig. 6 and the accompanying description. While the drawing of the cavity 36 and cavity inserts 29 and 29A in Figs. 3, 4, and 7 are not detailed enough to depict the void above the surface of the chip 33 during the encapsulation process, it is clear that the system disclosed by Neu produces such a void during encapsulation. Thus, it should be clear that the Neu reference does not disclose all of the elements recited in claim 1, since the Neu reference does not disclose a cavity plate “having an aperture configured to accept a protruding portion of the circuit package

such that the protruding portion of the circuit package contacts the first support plate.”

Accordingly, the Neu reference cannot possibly anticipate the subject matter set forth in claim 1.

With regard to claim 5 (dependent on claim 1), the Examiner stated that “Neu discloses a carrier strip 32 carrying a plurality of objects to be encapsulated, (col. 5, lines 5-9). The strip is disposed between the first support plate and the cavity plate (Fig. 1).” Claim 5, as amended, recites a system for molding a circuit package “wherein the first support plate comprises a film disposed in contact with the protruding portion of the circuit package.” The film 95 may be used to account for height differences in the die such that the surface of the die and the first support plate are in contact during the encapsulation process. This facilitates encapsulation whereby the top surface of the die is left exposed after the encapsulation process. It is clear that the carrier strip 32 is not disposed between the first support plate and in contact with the protruding portion (i.e., the die) of the circuit package. Thus, the Neu reference does not recite all of the elements of claim 5 as amended. Accordingly, the Neu reference cannot possibly anticipate the subject matter set forth in claim 5.

With regard to claim 8 (dependent on claim 1), the Examiner stated, “Neu discloses the first support plate 27 comprises a plateau (see Fig. 8 area 49), which resides adjacent to a recess in the cavity plate 29.” Claim 8 recites a system wherein the first support plate comprises a plateau which resides adjacent a recess in the cavity support plate. However, as illustrated in Figs. 1, 2, 6, and 8 of the Neu reference the flood gate 49 (characterized by the Examiner as the presently recited “plateau”) is not part of the loading bar 27 (“first support plate”). Rather, the flood gate 49 is part of the support platform 12, as clearly illustrated in Fig. 2. Because the flood

gate 49 is not part of the loading bar 27, it is clear that claim 8 recites elements not disclosed in the Neu reference. Accordingly, the Neu reference cannot possibly anticipate the subject matter set forth in claim 8.

In view of the remarks and amendments set forth above, Applicant respectfully submits that the subject matter of independent claim 1 and dependent claims 2, 5, 6, 8-14, and 17-19 is not anticipated by Neu since the present claims clearly recite elements not found in the cited reference. Accordingly, Applicant requests withdrawal of the Examiner's rejection and allowance of claims 1, 2, 5, 6, 8-14 and 17-19.

Rejections Under 35 U.S.C. § 103

The Examiner rejected claims 3, 4, 7, 15, 16 and 20 under 35 U.S.C. § 103(a) as being unpatentable over Neu. Each of the rejected claims is dependent on claim 1. The Examiner's rejections are too lengthy to be efficiently reproduced in their entirety herein. However, with specific regard to claims 15 and 16, the Examiner stated:

Neu discloses the aperture is sized to create a peripheral void at the same height as the protrusion portion of the circuit package to permit a molding compound to be deposited. However, the cavity plate can be designed for many sizes and shapes. Therefore, it is obvious to size the aperture having a peripheral void about the protrusion portion of the circuit package to permit a molding compound to be deposited and is merely a design choice.

Applicant respectfully traverses this rejection. The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). Obviousness cannot be established by combining or modifying the teachings of the prior art to produce the claimed invention absent some teaching or suggestion

supporting the combination or modification. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). Accordingly, to establish a *prima facie* case, the Examiner must not only show that the combination or modification includes *all* of the claimed elements, but also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985). Further, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988).

As discussed above, with reference to the rejection of base claim 1 on which claims 15 and 16 depend, Neu does not disclose or suggest providing an aperture sized to produce a molded package wherein the top surface of the die is left exposed. Contrary to statements by the Examiner, providing an aperture to facilitate the molding of the periphery of the die only to alleviate the addition of any height to the package is clearly a problem that is not envisioned by the Neu reference. The variation in aperture heights described in the Neu reference do not contemplate providing an aperture height to block encapsulation of the die surface. The Neu reference simply does not appreciate the disadvantages associated with increasing the height of the circuit package by encapsulating the die surface.

Further, even if the aperture described in Neu were incidentally constructed such that the surface of the die is brought in contact with the first support plate (i.e., loading bar 27) during encapsulation, it is not at all clear from the Neu reference that the contact point between the loading bar 27 and the surface of the die would create a sufficient seal to block the deposition of

molding compound onto the surface of the die. In fact, without the introduction of a resilient film or resilient material on the first support plate, it would appear that sizing the aperture with the same height as the die, as described in the Neu reference, may not only fail to adequately encapsulate the die, but it may cause damage to the die surface. As can be appreciated by the Examiner, a section 103 rejection based upon modification of a reference that destroys the intent, purpose, or function of the invention disclosed in the reference is not proper, and a *prima facie* case of obviousness cannot be properly made. In short, there would be *no technological motivation* for engaging in the modification or change. To the contrary, there would be a disincentive. *In re Gordon*, 733 F.2d 900, 211 USPQ 1125 (Fed. Cir. 1984).

Because the problem to which the present invention is directed is not appreciated by the Neu reference and because modification of the system recited in Neu would likely result in damage to the package to which the system is constructed to support, Applicant respectfully submits that claims 15 and 16 cannot possibly be obvious in light of the cited reference. Further, based on their dependency of independent claim 1 and for the reasons set forth above with regard to the rejection under 35 U.S.C. § 102, claims 3, 4, 7, 15, 16 and 20 are not rendered obvious by the cited reference. Since the cited reference does not disclose all of the elements recited in claim 1, the Examiner has failed to meet his burden of establishing a *prima facie* case of obviousness for those claims dependent thereon. In view of these remarks, Applicant respectfully requests withdrawal of the Examiner's rejection and allowance of claims 3, 4, 7, 15, 16 and 20.

Conclusion

In view of the above remarks and amendments set forth above, Applicant respectfully request allowance of claims 1-20. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Attachment

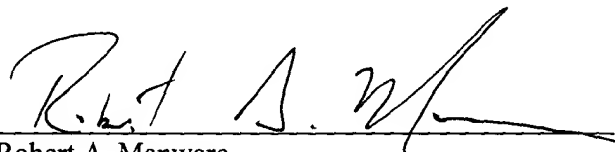
Attached hereto is a clean version of the changes made to the claims by the current amendment. The attached page is captioned "CLEAN VERSION TO SHOW CHANGES MADE."

General Authorization for Extensions of Time

In accordance with 37 C.F.R. § 1.136, Applicants hereby provide a general authorization to treat this and any future reply requiring an extension of time as incorporating a request therefor. Furthermore, Applicants authorize the Commissioner to charge the appropriate fee for any extension of time to Deposit Account No. 13-3092; Order No.: MICS:0043 (99-0634).

Respectfully submitted,

Date: March 1, 2002



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CLEAN VERSION TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 1, 5, 9, 10 and 11 have been amended as follows:

1. (once amended) A system for molding a circuit package comprising:

a first support plate;

B1

a second support plate proximately positioned with respect to first support plate; and

a cavity plate positioned between the first support plate and the second support plate, the cavity plate having an aperture configured to accept a protruding portion of the circuit package such that the protruding portion of the circuit package contacts the first support plate.

5. (once amended) The system for molding a circuit package, as set forth in claim 4, wherein the first support plate comprises a film disposed in contact with the protruding portion of the circuit package.

B2

9. (once amended) The system for molding a circuit package, as set forth in claim 1, wherein the first support plate contains a plurality of cavity plate push rods.

B3

10. (once amended) The system for molding a circuit package, as set forth in claim 9, wherein the cavity plate push rods are mechanically controlled to separate the cavity plate from the first support plate.

• B3

11. (once amended) The system for molding a circuit package, as set forth in claim 1, wherein the first support plate contains rail ejection pins.
